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CLAIMS

- A radio communications device comprising
 - (i) a plurality of antenna elements; and
 - a combiner arranged to adaptively combine said antenna elements such that two or more directional antenna beams are provided which are diverse.
- A radio communications device as claimed in claim 1 which is a
 multiple-input multiple-output (MIMO) communications device
 and wherein the combiner is arranged such that the two or more
 directional antenna beams are suitable for MIMO
 communications.
- A radio communications device as claimed in claim 1 which is selected from a user terminal and a basestation.
- A radio communications device as claimed in claim 1 wherein said antenna beams are diverse as a result of any of polarisation diversity, angle diversity and space diversity.
- A radio communications device as claimed in claim 1 wherein said combiner comprises at least one beamformer.
- A radio communications device as claimed in claim 1 wherein at least some of said antenna elements are provided as a phased array.
- A radio communications device as claimed in claim 1 wherein a
 pair of antenna beams are provided with substantially
 orthogonal polarisations and at substantially similar directions.
- 8. A radio communications device as claimed in claim 7 wherein a second pair of antenna beams is provided also with substantially orthogonal polarisations to one another and at substantially similar directions but being at a different direction from the first pair of antenna beams.

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- A radio communications device as claimed in claim 1 wherein said combiner is arranged to electronically steer the directional antenna beams.
- A communications network comprising a plurality of radio communications devices as claimed in claim 1.
- A method of operating a radio communications device comprising the steps of:
 - (i) receiving radio signals at a plurality of antenna elements by;
 - (ii) using a combiner to adaptively combine the antenna elements such that they are operable in at least one direction to receive two or more diverse channels.
- 12. A method as claimed in claim 11 wherein said radio communications device is a multiple-input multiple-output communications device and wherein said received signals are space-time coded and said diverse channels are multiple-input multiple-output channels.
- A method of operating a radio communications device comprising the steps of:
 - (i) transmitting radio signals from a plurality of antenna elements by;
 - (ii) using a combiner to adaptively combine the antenna elements such that they are operable in at least one direction to transmit two or more diverse channels.
- 14. A method of operating a radio communications device as claimed in claim 13 which is a multiple-input multiple-output communications device and wherein said radio signals are space-time coded and said diverse channels are multiple-input multiple-output channels.